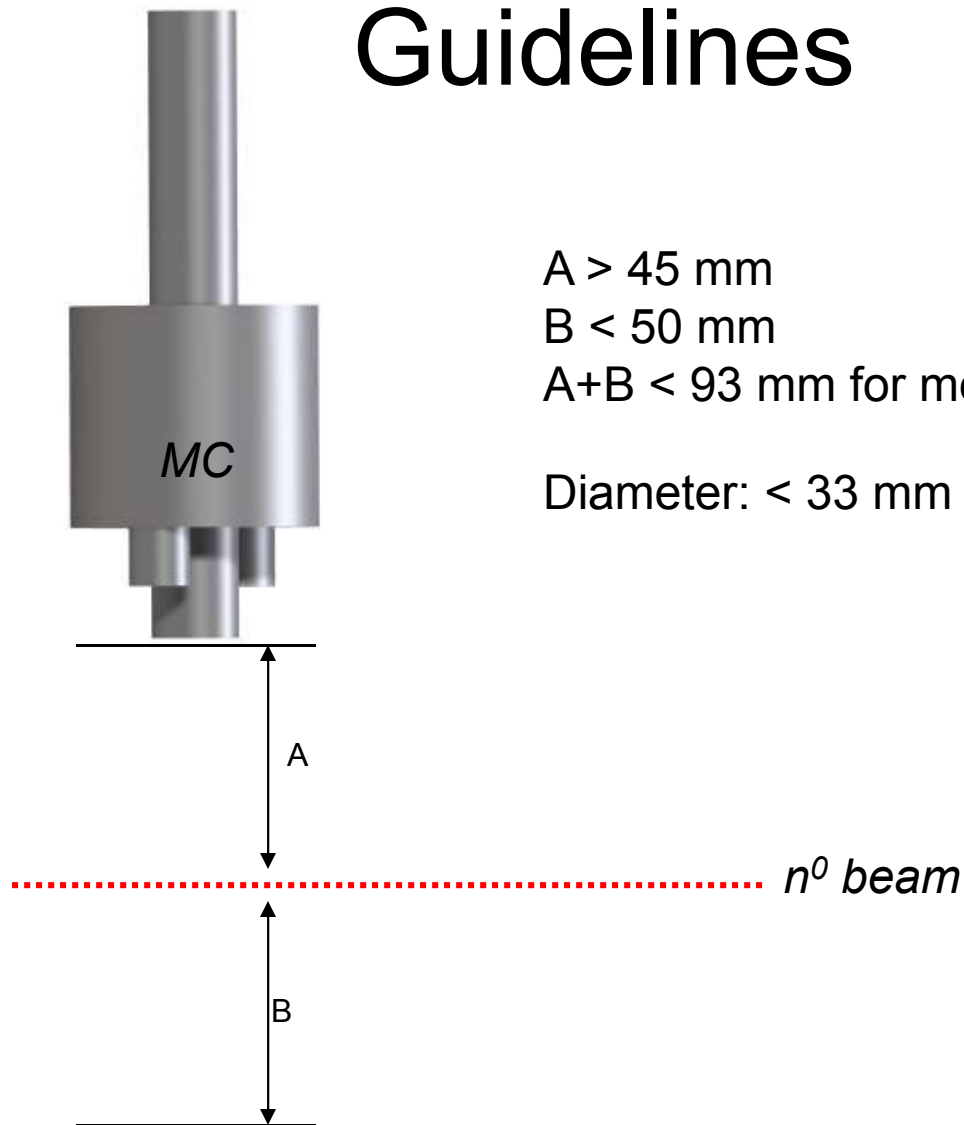


# Sample Mounting Guidelines



$A > 45 \text{ mm}$

$B < 50 \text{ mm}$

$A+B < 93 \text{ mm}$  for medium IVC

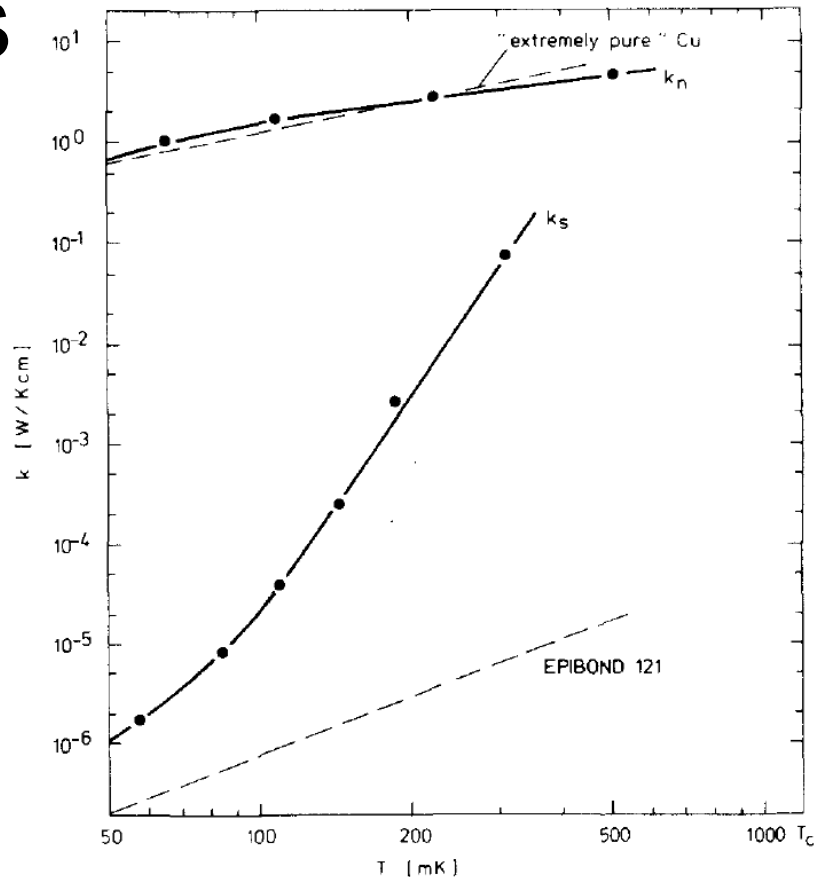
Diameter:  $< 33 \text{ mm}$

When designing a means of mounting the sample, it must **not extend more than 50mm below beam center** at most.

Mount the sample in such a way that it is **at least 45mm from the mixing chamber**, and use the medium VTI. The small VTI is for situations in which the sample mount is too small.

# Sample Mounting Guidelines

•We *strongly* recommend the sample mount be made of **copper**. If you make your holder out of aluminum, your sample will never come into equilibrium with the mixing chamber temperature, and may stay as warm as 1K. The thermal conductivity of Cu is six orders of magnitude better than Al at 50 mK [Pobell p.68] unless you can turn on a magnetic field to drive the Al normal.



Thermal conductivity of Copper vs Aluminum in the superconducting state  $\kappa_s$  and the normal state  $\kappa_n$ . From Pobell.



5/16 -18 threaded hole,  
5 mm deep.

We have a variety of adapters if necessary, but it's best not to use them.

- Make your sample mount with as few joints/interfaces as possible. Each discontinuity increases the time it takes for your sample to come into equilibrium with the MC temperature. We're talking DAYS.
- Firmly anchor your sample to the holder. It doesn't do much good to cool the holder if your sample is thermally disconnected from it.
- Put the  *tiniest*  possible amount on Apiezon N-grease on every discontinuity. Too much makes it worse.